

REMARKS

This Amendment is fully responsive to the non-final Office Action dated June 10, 2011, issued in connection with the above-identified application. Claims 29, 30 and 32-56 are pending in the present application. With this Amendment, claims 29, 30 and 32-49 are amended; and claims 50-56 are cancelled without prejudice or disclaimer to the subject matter therein. No new matter has been introduced by the amendments made to the claims. Favorable reconsideration is respectfully requested.

In the Office Action, claims 29, 30, 32-37, 39-41 and 43-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Guenebaud (U.S. Pub. No. 2003/0012377, hereafter “Guenebaud”) in view of Marlowe (U.S. Patent No. 4,169,659, hereafter “Marlowe”), and further in view of Colman (U.S. Pub. No. 2002/012419, hereafter “Colman”) and Hurst (U.S. Pat. No. 6,985,188, hereafter “Hurst”).

Claims 50-55 are cancelled thereby rendering the above rejection to those claims moot. Additionally, the Applicants have amended independent claim 29 in order to more clearly distinguish the claimed invention from the cited prior art. Independent claim 29 (as amended) recites *inter alia* the following features:

“[a] digital television receiver module for use in a digital television receiver, wherein the digital television receiver module connects decoders of devices with front-end circuits and conditional access (CA) modules made differently for respective broadcast specifications, the digital television receiver module comprising:...

an interface device for executing input and output processing on a plurality of signals communicated among the CA modules, the decoding device and the control device,

wherein the interface device comprises at least one set of a first input buffer, a first output buffer, and a second input buffer, the first input buffer including an input terminal connected to one terminal of the second common terminal group, and an output terminal connected to the decoding device,

the first output buffer includes an input terminal connected to the control device, and an output terminal connected to one terminal of the second common terminal group, the second input buffer including an input terminal of another terminal of the second common terminal group and an output terminal connected to the decoding device, and

the control device controls the interface device by changing a signal type, input direction and output direction of the signal communicated via a terminal of the second common terminal group by controlling on-off states of the first input buffer, on-off states of the first output buffer, and on-off states of the second input buffer, based on the predetermined terminal table so as to conform to the terminal specifications of a connected CA module and in response to at least one of a broadcasting system of an inputted digital television signal and a type of the connected CA module, and based on a type-classifying data signal inputted from a memory mounted on the external substrate via the first connecting device.” (Emphasis added).

The features emphasized above in independent claim 29 are fully supported by the Applicants’ disclosure (see e.g., ¶[0077], ¶[0078], ¶[0082] and Fig. 6). The present invention (as recited in independent claim 29) is believed to be distinguished from the cited prior art in that a digital television receiver module (i.e., connected to decoders of devices with front-end circuits and conditional access (CA) modules made differently for respective broadcast specifications) includes features of an interface device and a control device that are not disclosed or suggested by the cited prior art.

More specifically, the interface device executes input and output processing on a plurality of signals communicated among CA modules, a decoding device and a control device. The interface device includes at least one set of a first input buffer, a first output buffer, and a second input buffer, wherein the first input buffer includes an input terminal connected to one terminal of a second common terminal group and an output terminal connected to the decoding device. The first output buffer includes an input terminal connected to the control device, and an output terminal connected to one terminal of the second common terminal group, and the second input buffer includes an input terminal of another terminal of the second common terminal group and an output terminal connected to the decoding device.

Additionally, the control device controls the interface device by changing a signal type, input direction and output direction of the signal communicated via a terminal of the second common terminal group by controlling on-off states of the first input buffer, on-off states of the first output buffer, and on-off states of the second input buffer. The control of the interface device is based on a predetermined terminal table and is performed so as to conform to the terminal specifications of a connected CA module and in response to at least one of a broadcasting system of an inputted digital television signal and a type of the connected CA

module, and based on a type-classifying data signal inputted from a memory mounted on the external substrate via the first connecting device.

In the Office Action, the Examiner relies on the combination of Guenebaud, Marlowe, Colman and Hurst for disclosing all the features recited in independent claim 29. However, the Applicants assert that Guenebaud, Marlowe, Coleman and Hurst fail to disclose or suggest all the features of the interface device and control device now recited in independent claim 29, as amended.

In the Office Action, it appears that the Examiner relies on ¶[0075] of Guenebaud and on col. 2, lines 30-39 of Hurst for disclosing or suggesting the features of the claimed interface device of independent claim 29. However, independent claim 29 now recites:

“an interface device for executing input and output processing on a plurality of signals communicated among the CA modules, the decoding device and the control device, wherein the interface device comprises at least one set of a first input buffer, a first output buffer, and a second input buffer, the first input buffer including an input terminal connected to one terminal of the second common terminal group, and an output terminal connected to the decoding device.”

Conversely, Guenebaud in ¶[0075] discloses that an interface module can be integrated into a digital television signal decoder and the digital television signal decoder may include more than one interface module.

Hurst in col. 2, lines 30-39 discloses a digital video decoding system that includes buffers for storing encoded video data representing images of video programs conveyed on corresponding video channels. As described in Hurst (i.e., col. 2, lines 30-39), an individual buffer, corresponding to an individual video channel, stores sufficient encoded video data to prevent an underflow condition when switching to the decoding of a program. A processor initiates switching to the decoding of the program conveyed on a selected video channel in response to a user channel selection input.

As noted above, Gueneguad (i.e., ¶[0075]) only mentions that an interface can be used in a digital television signal decoder. Additionally, Hurst (i.e., col. 2, lines 30-39) discloses a digital video decoding system that includes a plurality of buffers. Thus, the combination of Guenebaud and Hurst, at best, discloses a digital television signal decoder that includes an interface and a plurality of buffers. Nothing in the combination of Guenebaud and Hurst

discloses or suggests an interface that executes input and output processing on signals communicated among CA modules, a decoding device and a control device, wherein the interface device includes at least one set of a first input buffer, a first output buffer, and a second input buffer, as recited in independent claim 29.

In the Office Action, it appears that the Examiner relies on ¶[0012] of Coleman and on col. 2, lines 30-39 of Hurst for disclosing or suggesting the features of the claimed control device of independent claim 29. However, independent claim 29 now recites:

“the control device controls the interface device by changing a signal type, input direction and output direction of the signal communicated via a terminal of the second common terminal group by controlling on-off states of the first input buffer, on-off states of the first output buffer, and on-off states of the second input buffer, based on the predetermined terminal table so as to conform to the terminal specifications of a connected CA module and in response to at least one of a broadcasting system of an inputted digital television signal and a type of the connected CA module, and based on a type-classifying data signal inputted from a memory mounted on the external substrate via the first connecting device.”

Coleman in ¶[0012] discloses a security device used as a replaceable device in a cable system for providing a security function for conditional access. The security device provides a standard interface to allow a separation of conditional access functions from those of set-top box functions, and includes a conditional access card to support the security function for conditional access. By replacement of different conditional access cards, the security device can be upgraded with minimal impact and different conditional access cards can be inserted into the security device to gain access to different programs.

Hurst in col. 2, lines 30-39 discloses a digital video decoding system that includes a plurality of buffers for storing encoded video data representing images of video programs conveyed on corresponding video channels. As described in Hurst (i.e., col. 2, lines 30-39), an individual buffer, corresponding to an individual video channel, stores sufficient encoded video data to prevent an underflow condition when switching to the decoding of a program. A processor initiates switching to the decoding of the program conveyed on a selected video channel in response to a user channel selection input.

In summary, Coleman in ¶[0012] discloses a security device that receives conditional access cards for controlling access to different programs, whereas Hurst (i.e., col. 2, lines 30-39)

discloses a processor that initiates switching to the decoding of the program conveyed on a selected video channel in response to a user channel selection input. Thus, the combination of Coleman and Hurst, at best, discloses a digital video decoding system that includes a conditional access card and a processor for controlling access to different programs.

The combination of Coleman and Hurst fails to disclose or suggest a control device that controls an interface device by changing a signal type, input direction and output direction of the signal communicated via a terminal of the second common terminal group by controlling on-off states of the first input buffer, on-off states of the first output buffer, and on-off states of the second input buffer, as recited in independent claim 29.

Based on the above discussion, no combination of Guenebaud, Marlowe, Colman and Hurst would result in, or otherwise render obvious, all the features of independent claim 29. Likewise, no combination of Guenebaud, Marlowe, Colman and Hurst would result in, or otherwise render obvious, all the features of claims 30, 32-37, 39-41 and 43-49 at least by virtue of their dependencies from independent claim 29.

In the Office Action, claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over Guenebaud in view of Marlowe, and further in view of Colman, Hurst and Candelore (U.S. Pub. No. 2004/0228175, hereafter “Candelore”); claim 42 is rejected under 35 U.S.C. 103(a) as being unpatentable over Guenebaud in view of Marlowe, and further in view of Colman, Hurst, and Jensen et al. (U.S. Pat. No. 6,603,080, hereafter “Jensen”); and claim 56 is rejected under 35 U.S.C. 103(a) as being unpatentable over Guenebaud in view of Marlowe, and further in view of Colman, Hurst and Sengupta et al. (U.S. Pub. No. 2005/0088255, hereafter “Sengupta”).

Claim 56 has been cancelled thereby rendering the above rejection to that claim moot. Additionally, claims 38 and 42 depend (directly or indirectly) from independent claim 29. As noted above, no combination of Guenebaud, Marlowe, Coleman and Hurst would result in, or otherwise render obvious, the features of independent claim 29. Moreover, Candelore, Jensen and Sengupta fail to overcome the deficiencies noted above in Guenebaud, Marlowe, Coleman and Hurst. Accordingly, no combination of Guenebaud, Marlowe, Coleman and Hurst with Candelore, Jensen or Sengupta would result in, or otherwise render obvious, claims 38 and 42 at least by virtue of their dependencies from independent claim 29.

In light of the above, the Applicants submit that all the pending claims are patentable over the prior art of record. The Applicants respectfully request that the Examiner withdraw the

rejections presented in the outstanding Office Action, and pass the present application to issue. The Examiner is invited to contact the undersigned attorney by telephone to resolve any issues remaining in the application.

Respectfully submitted,

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